

Electromagnetic Wave Propagation

USSR

Yu. I. Solov'yev (editor), L. M. Kaplina (technical editor)

Propagation of Radio Waves with Meteors (Meteornoye rasprostraneniye radiovoln), Kazan', Izd-vo Kazanskogo universiteta, 1970, 700 copies
128 pages

ABSTRACT: The book contains a collection of articles on the results of research on meteoric phenomena and embraces a wide range of problems of meteor astronomy including the use of meteors for geophysical investigations and for the transmission of information and precise time signals. Measurement equipment is described.

The book is intended for scientists, engineers and graduate and undergraduate students.

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SOLOV'YEV, Yu.I., et al, Izd-vo Kazanskogo universiteta, 1970, 700 copies
128 pages

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SOLOV'YEV, Yu.I., et al, Izv-vo Kazanskogo universiteta, 1970, 700 copies
128 pages

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USSR

UDC 621.791.39.62-82:62-415

MURAV'YEV, B. I., and SOL V'YEV, Yu. I., Engineers, Leningrad Branch of All-Union Scientific Research Institute for Medical Instruments and Equipment

"Clamping Device for Welding Longitudinal Seams of Specimens of Thin Sheet Material"

Moscow, Svarochnoye Proizvodstvo, No 6, 1971, pp 57-58

Abstract: A description and diagram of a hydraulic clamping device for welding longitudinal seams in thin sheet material are presented. The sheets are clamped against plates by ten independent point clamps, each of which can be adjusted for length and pressure. Formulas are presented for determination of the clamping force as a function of pressure in the hydraulic cylinder.

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172 008
TITLE--REVIEW OF PERIODIC TABLE -U- UNCLASSIFIED
AUTHOR--SOLOVYEV, YU. I. 5
COUNTRY OF INFO--USSR
SOURCE--KHIM. SHK. 1970, 25(1), 23-30
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--PERIODIC SYSTEM, BIBLIOGRAPHY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/1561
CIRC ACCESSION NO--AP0125187
STEP NO--UR/0509/70/025/001/0023/0030
UNCLASSIFIED

2/2 008
CIRC ACCESSION NO--AP0125187 UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONTRIBUTIONS OF D. I.
MENDELEEV AND LOTHAR MEYER IN DISCOVERY OF THE PERIODIC SYSTEM OF THE
ELEMENTS AND FORMATION OF THE PERIODIC TABLE ARE REVIEWED.
PROCESSING DATE--27NOV70

UNCLASSIFIED

USSR

UDC 621.362.2

KAZANDZHAN, B. I., SOLOV'YEV, Yu. M.

"Electrical Conductivity of Molten Salts"

Tr. Mosk. energ. in-ta (Works of the Moscow Power Engineering Institute),
1970, vyp. 75, pp 178-184 (from RZh-Elektrotehnika i energetika, No 1,
Jan 71, Abstract No 1A163)

Translation: An advantage of molten salts used as thermoelectric materials
is their low cost and the weak dependence of their properties on tem-
perature. The authors study the conductivity σ of melts of 75% CuCl + 2%
NaCl, CuCl, KCl, NaCl, AgCl and PbCl₂ at temperatures of 700-1230°K. The
value of σ ranges from 2.0 to 4.8 $\Omega^{-1}\text{cm}^{-1}$. Four illustrations, bibliog-
raphy of four titles.

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1/2 025
UNCLASSIFIED
TITLE--NEW EMV-100L HIGH RESOLUTION ELECTRON MICROSCOPE -U-
PROCESSING DATE--04DEC70
AUTHOR--SOLOVYEV, YU.N.
COUNTRY OF INFO--USSR
SOURCE--LENINGRAD, OPTIKO MEKHANICHESKAYA PROMYSHLENNOST' NO 1, JAN 70, PP
37-41
DATE PUBLISHED----JAN70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ELECTRON MICROSCOPE, OPTIC PROPERTY, IRON NICKEL ALLOY, OPTIC
LENS/(U)EMV100L ELECTRON MICROSCOPE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1997/0941
CIRC ACCESSION NO--AP0119819
STEP NO--UR/0237/70/000/001/0037/0041
UNCLASSIFIED

2/2 025

CIRC ACCESSION NO--AP0119819
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--04DEC70

ABSTRACT. THIS ARTICLE DESCRIBES THE DEVELOPMENT WORK ON A EMV-100L HIGH RESOLUTION (2 ANGSTROM) ELECTRON MICROSCOPE, CONDUCTED JOINTLY BY A TEAM UNDER THE LEADERSHIP OF P. A. STOYANOV AND BY THE LABORATORY HEADED BY V. V. POLIVANOV, WHICH ALREADY HAVE DESIGNED A SERIES OF HIGH RESOLUTION ELECTRON MICROSCOPE WERE DEVELOPED ON THE BASIS OF THEORETICAL AND NEW EXPERIMENTAL DATA OBTAINED IN RECENT YEARS. ALL MICROSCOPE LENSES ARE MADE OF PRECISE FERRO NICKEL ALLOY (PERMALLOY); THE DISPERSION FIELDS IN THE INTERLENS SPACE ARE GREATLY REDUCED, AND THEIR EFFECT ON THE INSTRUMENT ADJUSTMENT TECHNIQUE IS ELIMINATED. THE LENS WINDINGS, MADE IN THE FORM OF SEPARATE BLOCS, ARE HEAT INSULATED AND THERMALLY STABILIZED. THIS MAKES IT POSSIBLE TO ELIMINATE THE THERMAL DRIFTS OF CERTAIN COMPONENTS AND TO ENSURE THE ADJUSTMENT OF STABILITY. THE POSSIBILITY OF RAPID ESTABLISHMENT OF THE HEAT BALANCE IN THE OBJECTS CHAMBER AND ALSO THE COMPENSATION OF THERMAL EXPANSION OF COMPONENTS OF THE TRANSLATION MECHANISM ARE REALIZED. A PHOTOGRAPH OF THE INSTRUMENT AND SEPARATE BLOCS, WHICH CONSTITUTE THE MICROSCOPE, IS PRESENTED AND FOLLOWED BY THE DESCRIPTION OF SINGLE BLOCS. THE RESULTS OF TESTS CONDUCTED AT UP TO 400,000X ENLARGEMENTS SHWO, THAT THE LIMIT RESOLUTION OF THE MICROSCOPE IS 2.1 ANGSTROM. A UNIQUE PHOTOGRAPH OF THE DIFFRACTION FRESNEL BANDS (90 BANDS) ON THE DEFOCUSED EDGED OF A M SUBO O SUB3 CRYSTAL CONFIRMS THE EXCEPTIONAL MECHANICAL STABILITY.

UNCLASSIFIED

USSR

UDC 669.721.046.4

LYANDRES, M. B., SOLOMENTSEV, V. A., REZNIKOV, I. L., SOLOV'YEV, Yu. V.,
ENGEL', E. K.

"Automation of the Process of Dehydration of Carnallite in Fluidized Bed
Furnaces"

Avtomatiz. Proizv. Protsessov Tsvet. Metallurgii [Automation of Production
Processes in Nonferrous Metallurgy -- Collection of Works], Ordzhonikidze,
It Press, 1971, pp 78-80, (Translated from Referativnyy Zhurnal, Metallurgiya,
No 5, 1972, Abstract No 5 G244 by G. Svodtseva).

Translation: The production of dehydrated carnallite has been automated at
the carnallite shop of the Bereznikovskiy titanium-magnesium combine on the
basis of scientific research and planning-design work, allowing a significant
technical-economic effect to be produced and the productivity of labor to be
increased by 2 times.

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USSR

UDC 669.295.004.2

SOLOV'YEV, Yu. V., BARKOV, L. S., SHCHETKIN, Ye. A., KORNIYENKO, L. A.,
SEMEN'KOV, A. V.

"Continuous Installation for Decontamination of Titanium-Magnesium Production
Gas Purification Waste Water"

Tr. Vses. N.-i. i Proekt. In-ta Alyumin., Magn. i Elektrod. Prom-sti [Works
of All-Union Scientific Research and Planning Institute for the Aluminum,
Magnesium and Electrode Industry], No 79, 1971, pp 95-99, (Translated from
Referativnyy Zhurnal, Metallurgiya, No 5, 1972, Abstract No 5 G269 by G.
Svodtseva).

Translation: An installation with a planned productivity of 2.5 m³/hr chlori-
nated lime milk has been constructed and tested at the Bereznikovskiy titanium-
magnesium combine. Tests were performed using the waste water from gas purifi-
cation in the electrolysis shops and acid waste waters from gas purification
from the section where carnallite is dehydrated in fluidized bed furnaces. Ex-
traction of Cl₂ from the wastes is 28%; the main losses (66%) result from the
formation of CaCl₂. The extraction of Cl₂ can be increased by increasing the
concentration of Ca(ClO)₂ and decreasing the concentration of Ca(OH)₂ and
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USSR

UDC 669.295.004.2

SOLOV'YEV, Yu. V., BARKOV, L. S., SHCHETKIN, Ye. A., KORNIYENKO, L. A.,
SEMEN'KOV, A. V., Tr. Vses. N.-i. i Proekt. In-ta Alyumin., Magn. i Elektrod.
Prom-sti, No 79, 1971, pp 95-99.

CaCO_3 in the chlorinated lime milk. The annual economic effect of introduction
of this method of the combine was 250,000 rubles.

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USSR

UDC 621.373.431(088.8)

GRYZLOV, A. I., SOLOV'YEV, YU. V., RAYEVSKIY, A. YE. BELOV, YU. V.
"High-Power Oscillator"

USSR Author's Certificate No 275114, Filed 6 Sep 68, Published 15 Oct 70 (from
RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4G207P)

Translation: A high-power oscillator is proposed. It contains a power supply, a resonance charge choke, a shaping line, a synchronizer, a delay line, a commuting thyatron and a pulse transformer. In order to reduce the cutoff duration and improve the deionization conditions, a shunting thyatron is included in parallel to the primary coil of the transformer. The control electrode of the thyatron is connected to the output of the delay line.

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USSR

UDC 621.317.76:621.391.81.001.24

SOLOV'YEV, Yu. V., OLEYNIK, N. G.

"Calculation of an Optimal System of Measurements of the Time Parameters of Signals in the Presence of Additive Noise"

Elektronnaya Tekhnika. Nauchno-Tekhnicheskiy Sbornik. Kontrol'no-Izmeritel'naya Apparatura (Electronics Engineering. Scientific and Technical Collection of Works. Monitoring and Measuring Equipment), No 2 (20), 1970, pp 101-111 (from Referativnyy Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, No 1, 1971, Abstract No 1.32.68)

Translation: The article deals with the passage of signals and noise through a multichannel coincidence circuit. It is shown that the value of the amplitude ratio of the signal and the noise has little effect upon the distribution of the duration of random noise, but substantially affects the distribution law of the regular signal.

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Instrumentation and Equipment

USSR

UDC 669.721.046.4(088.8)

REZNIKOV, I. L., SOLOV'YEV, Yu. V., and SHCHEGOLEV, V. I.

"Multichamber Apparatus for Dehydration of Salts"

USSR Author's Certificate No 269008, Filed 17/05/68, Published 11/08/70
(Translated from Referativnyy Zhurnal-Metallurgiya, No 2, 1971, Abstract
No 2 G180 P)

Translation: This multichamber apparatus for dehydration of salts such as carnallite in a fluidized bed contains vertical chambers with gas distributing gratings, transverse barriers with flow apertures set above them, a charging device and a draining threshold for unloading the prepared material. To intensify the process and eliminate stagnant zones, the total area of the flow-through apertures is 3-4% of the area of the cross section of the chamber at the level of the drain threshold. To decrease carry-over of the material and provide for its zig-zag movement, the chambers are equipped with longitudinal barriers with flow-through apertures placed directly over the gas distributing grating.

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USSR

Pulse Technique

UDC 621.376.53(088.8)

ZVONTSOV, A. G., GRIZLOV, A. I., BELOV, YU. V., SOLOV'YEV, YU. V.

"Pulse Modulator"

USSR Author's Certificate No 252394, Filed 27 Sep 67, Published 12 Feb 70
(from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D246P)

Translation: This author's certificate introduces a pulse modulator containing a high-voltage direct-current source with a charge choke and a separating diode, a hollow commutator made of two thyratrons with autonomous ignition generators, a storage element in the form of an artificial line and a load. In order to accelerate deionization of the thyatron and eliminate repeated breakdown by the return voltage, it is equipped with an auxiliary diode which is connected to the discharge circuit of the thyatron between its anode and a common terminal for connecting the separating diode with the artificial line.

Controls

USSR

UDC 621.396.61:621.311.6(088.8)

GRYZLOV, A. I., RAYEVSKIY, A. YE., SOLOV'YEV, YU. V.

"Device for Fixing the Bias"

USSR Author's Certificate No 253171, Filed 5 Sep 67, Published 24 Feb 70
(from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D338P)

Translation: This author's certificate introduces a device for fixing the bias in a grid circuit of a powerful modulator tube included in series with the source of control pulses to the grid circuit of the modulator tube. In order to decrease the rectifier power, a circuit of series connected thyratrons and a capacitor is connected in parallel to the filter capacitor. A circuit made up of another series connected thyatron and resistor is connected in parallel, in turn, to the thyatron and the capacitor, and the grids of the indicated thyratrons are connected to the source of the synchronous pulses via a delay line.

Plant Pathology

USSR

UDC 633+632.938

SMIRNOVA, L. A., ANPILOCOVA, L. K., SOLOV'YENKO, A. I. (Deceased), RUDANOVSKAYA, Ye. A., RASSADINA, Ye. G., CHUMAKOV, A. Ye., and MOSTOVOY, V. A., All-Union Scientific Institute of Plant Protection, Leningrad, North Caucasian Scientific Research Institute of Plant Pathology, Krasnodar, and Central Asian Scientific Research Institute of Plant Pathology, Tashkentskaya Oblast

"Face Formation in *Puccinia graminis* Pers. f. sp. *tritici* in the USSR"

Leningrad, Mikologiya i Fitopatologiya, No 6, 1971, pp 494-499

Abstract: Besides discussing the current status of the problem of the race composition of stem rust of wheat, the article synthesizes the latest data embodied in reports sent to the journal Mikologiya i Fitopatologiya for publication. More than 100 races are now known, many discovered in the last 10 years. During this time the main races of *P. graminis* were fairly stable, with changes occurring only in their quantitative correlations in different years and geographic zones. Despite their great variety, only a few are found in almost all zones, i.e., 11, 17, 21, and 34. The sexual process, heterokaryosis, and mutations play a major role in the origin of new races of the agent of stem rust of wheat. The factor most responsible for the formation of new virulent races is the presence of resistant wheat varieties grown for a long time over large areas.

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USSR

UDC 616.988.75-092.9

GAVRILOV, V. I., SOLOV'YEVA, A. I., and VYALISHCHINA, S. O., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR

"A Model of Chronic Influenzal Infection of a Line of Swine Cells"

Moscow, Voprosy Virusologii, No 1, 1970, pp 14-20

Abstract: Fetal pig kidney cells were inoculated with type A influenza virus and grown on medium 199 with bovine serum, streptomycin, and penicillin. A total of 31 passages were made over a period of 214 days. Virus was isolated up to the 16th passage (98 days) from chronically infected cultures. From the 17th passage on, however, all attempts to detect the virus in the culture fluid by means of consecutive passages in chick embryos, human embryonic lung tissue, chick embryo fibroblasts, etc. were unsuccessful. Samples of fluid were assayed at various times for interferon with negative results.

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1/2 021 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--DEVELOPMENT OF A MODEL OF CHRONIC INFLUENZA INFECTION OF A CELL
LINE DERIVED FROM NONPRIMATE ANIMAL -U-
AUTHOR-(03)-GAVRILOV, V.I., SOLOVYEVA, A.I., VYALUSHKINA, S.D.
COUNTRY OF INFO--USSR
SOURCE--VOPROSY VIRUSOLOGII, 1970, NR 1, PP 14-20
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--CONTINUOUS CULTURE, CELL CULTURE, INTERFERON, INFLUENZA VIRUS,
BIOLOGIC MODEL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/0067 STEP NO--UR/0402/70/000/001/0014/0020
CIRC ACCESSION NO--APO103747
UNCLASSIFIED

2/2 021

CIRC ACCESSION NO--AP0103747
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--18SEP70

ABSTRACT. CHRONIC INFECTION OF CONTINUOUS CULTURES OF PIG EMBRYO KIDNEY CELLS (RES) CAUSED BY INFLUENZA A VIRUS (WSN) WAS STUDIED. IN THE FIRST 5 PASSAGES (38 DAYS) THE VIRUS COULD BE DETERMINED IN RESWSN CULTURE FLUID IN TITERS OF 10^6 PRIME6.0 10^8 PRIME8.7 ELU SUB50 ONEFOURTH ML. FROM THE 5TH TO THE 16TH PASSAGE THE VIRUS COULD BE DETECTED ONLY BY MEANS OF SUCCESSIVE PASSAGES IN CHICK EMBRYOS, THE ZONE PHENOMENON BEING OBSERVED. AT SOME PASSAGE LEVELS ATTEMPTS TO DETECT VIRUS WERE NEGATIVE. THE LAST DETECTION OF VIRUS WAS SUCCESSFUL IN THE 16TH PASSAGE OF RESWSN CELLS (98TH DAY). FROM THE 17TH PASSAGE ALL ATTEMPTS TO DETECT INFECTION INFLUENZA VIRUS IN RESWSN CELL CULTURE FLUIDS BY MEANS OF SUCCESSIVE PASSAGES IN CHICK EMBRYOS, INOCULATION OF ORGAN CULTURES OF HUMAN EMBRYO LUNGS AND MOUSE EMBRYO LUNGS AND BY MEANS OF MIXED CULTURES OF RESWSN AND RES CELLS, CHICK EMBRYO FIBROBLASTS AND RESWSN CELLS WERE NEGATIVE. NEGATIVE RESULTS OF INTERFERON DETERMINATION IN SPECIMENTS OF TISSUE CULTURE FLUID FROM DIFFERENT PASSAGE LEVELS SUGGEST THAT INTERFERON APPARENTLY PLAYED NO ROLE IN CREATION OF A RELATIVE BALANCE BETWEEN RES CELLS AND INFLUENZA A (WSN) VIRUS. IT IS SUGGESTED THAT THE MAIN REASON OF "SPONTANEOUS" RECOVERY OF RESWSN CULTURES COULD LIE IN AUTOLOGICAL INTERFERENCE. MECHANICAL REMOVAL OF VIRUS AND OF DETACHED INFECTED CELLS DURING CHANGES OF THE MEDIUM MIGHT ALSO BE CONDUCTIVE TO IT.

UNCLASSIFIED

Mechanical Properties

USSR

UDC 669.14.015.2

TARANTOVA, A. S., PEVZNER, L. M., LOMBERG, B. S., SOLOV'YEVA,
G. G., and ZASLAVSKAYA, L. V.

"Martensite-Aged Steels with High Durability and Plasticity"

Moscow, Metalloboveniy e i Termicheskaya Obrabotka Metallov,
No 8, 1970, pp 70-74

Abstract: The purpose of the research described by this paper was to obtain martensite-aged steels based on the Fe-Ni-Co-Mo system with a durability of 240-280 kg/mm², and to study their structure, phase state, and mechanical characteristics. Alloys with 12-15% Ni, 13-17% Co, and 5-11% Mo with C 0.03% were checked. A more detailed study of these alloys was made on two levels of durability values. The chemical compositions and durabilities of the two are given in a table along with a third, the so-called Vascomax-350, for the sake of comparison. The first two alloys have no added titanium or aluminum, as opposed to ordinary martensite-aged alloys, to avoid the formation of embrittling carbonitrides; the third contains 1.6-2% titanium. To obtain high durability with maximum plasticity, the steels had to be made with pure furnace charges. Vacuum induction melting

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USSR

TARANTOVA, A. S., et al., Metalloboveniyе Termicheskaya
Obrabotka Metallov, No 8, 1970, pp 70-74

in laboratory furnaces with reduction through cerium and calcium were used. The weight of the melt was 50 kg. A second table gives details of the thermal processing applied to the castings after forging and water-cooling. In addition to this, the castings were analyzed chemically and by X-ray analysis. The results of the tests for the three melts as well as for standard brands ON18K9M5T and EI643 are given in a third table.

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USSR

SOLOV'YEVA, G. I.

UDC 621.373:530.145.6

"Power Saturation in a Helium-Neon Pulse Laser"

Elektron. tekhnika. Nauchno-tekhn. sb. Gazorazryadn. pribory (Electrical Engineering. Scientific and Technical Collection. Gas Discharge Devices), 1970, vyp. 4 (20), pp 8-15 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4D190)

Translation: Results are presented from studying the unsaturated inverse population and generation power at the neon junction $2s_2 \rightarrow 2p_4$ ($\lambda = 1.15 \mu$) in the presence of excitation of a mixture of neon with helium by short voltage pulses. The data obtained are compared with the results of numerical integration of the system of nonlinear differential equations for operating level populations and radiation density in the resonator. Interpretations of the relations obtained are presented.

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USSR

TIKHOVA, N. M., SOLOV'YEVA, G. G., BLOKHINA, V. A., ANTIPOVA, A. P., VASIL'YEVA, T. P. UDC 669.721:669.794:539.434

"Problem of the Theory of Alloying Magnesium with Rare Earth Metals and Yttrium" V sb. Redkozemel'n. met i splavy (Rare Earth Metals and Alloys -- collection of works), Moscow, Nauka Press, 1971, pp 99-103 (from RZh-Metallurgiya, No 4, Apr 72, Abstract No 4I656)

Translation: A study was made of the causes of the positive effect of rare earth metals and yttrium on the high-temperature strength of Mg in comparison with alloys of the Mg-Al system. A photograph of the microstructures of the alloys as a function of composition and heat treatment conditions is included, and tables are given for mechanical properties, known alloys, and a new experimental alloy with yttrium. 2 illustrations and 2 tables.

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USSR

UDC 621.785.784:669.721

TIKHOVA, N. M., BLOKHINA, V. A., ANTIPOVA, A. P., VASIL'YEVA,
T. P., SOLOV'YEVA, G. G., All-Union Scientific Research Institute
of Aviation Materials

"Effect of Prolonged Heating on Properties of the ML9 and ML10
Magnesium Alloys"

Moscow, Metallovedeniye, No 10, 1971, pp 73-76

Abstract: A study was made of the effect of prolonged heating, 0.5-30,000 hours, at 125-300°C, on the microstructure and mechanical properties of ML9 and ML10 heat-resistant cast magnesium alloys, developed on the base of the system Mg-Nd-Zr for continuous working at up to 250 and 300°C, respectively. The chemical compositions of the ML9 and ML10 alloys, their industrial heat treatment, and their mechanical properties in comparison with the widely used ML5 alloy are shown. The change of mechanical properties at temperatures up to 300°C is discussed. The structure and mechanical properties of the ML10 alloy, after heating at 200°C over periods of 1000 and 2500 hours are the same.

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USSR.

TIKHONOV, N. M., et al, Metallovedeniye, No 10, 1971, pp 73-76

At higher temperatures (2500C), an intensive decomposition of grains of the solid solution occurs. A microstructural change of the ML9 alloy after heating over a period of 1000 hours at 2000C and 10 hours at 2500C was not observed. Heating at 3000C changed its microstructure substantially. 3 illustrations, 6 tables, 1 bibliographic reference

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USSR

Inventions and Discoveries

UDC 615.472:615,847.8

SOLOV'YEVA, G. R., YEREMIN, V. A., and GORZON, R. R., All Union Scientific Research Institute of Medical Instrumentation Construction, Moscow

"Apparatus for Low-Frequency Magnetotherapy "Polyus-1"

Moscow, Meditsinskaya Tekhnika, No 5, Sep/Oct 73, pp 29-33

Abstract: An apparatus has been developed at the Scientific Research Institute of Medical Instrumentation Construction for producing non-contact action of a magnetic field. The instrument will be manufactured at the Electromedical Apparatus Plant (EMA). The advantage of this apparatus is that there are virtually no vibrational or heat side effects. It is designed for local application of a low-frequency magnetic field. A special inductor for gynecological application is available. Since the human body presents practically no barrier to the magnetic field, the air gap of a magnetic field may be used to calculate the depth of penetration of a patient. "Polyus-1" has been already successfully tested at several clinics.

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USSR

UDC 615.847.8

SOLOV'YEVA, G. R., All Union Scientific Research Institute of Medical Instrument
Building, Moscow

"The Present Status of and Future Possibilities for the Use of Permanent Magnetic
Fields in Medicine"

Moscow, Meditsinskaya Tekhnika, Vol 4, No 3, 1970, pp 35-43

Abstract: Permanent magnetic fields are used to remove substances from eyes, lungs, and stomach. Arterial and venous angiograms, and diagnosis of enlargement of the prostate gland are just a few of the surgical uses of the magnet. The use of magnetized water reduced cholesterol in rats 2.5-fold. Endarteritis, atherosclerosis, polyarthrititis, rheumatoid conditions, metabolic disturbances and burns were successfully treated with magnets. Magnetic bracelets were beneficial to some, but not to others. Successful use of the magnet in cancer, osteoarthritis, gastric and peptic ulcers, disturbances during climacteric, etc. has been reported in the U.S. The undesirable effects observed in people working under the continuous influence of magnets, such as hyperemia of the skin, and autonomic disturbances, indicate the possible danger of use of magnets without controls. Considering the great therapeutic possibilities and the complexity of the problems associated with the use of magnets, it is necessary to enlist the concerted effort of qualified engineers, physicists, biologists, and medical men.

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USSR

UDC 632.95

COLYSHIN, N. M., FEDOSEYENKO, L. G., UKRAINETZ, N. S., ANDRIYENKOV, V. I.,
and SOLOV'YEVA, G. V.

"Use of a Combined Preparation of Copper Oxychloride and Zineb"

V sb. Khim. sredstva zashchity rast. (Chemical Agents for Plant Protection --
collection of works), vyp 1, Moscow, 1970, pp 110-115 (from Khim-Khimiya,
No 11, Jun 72, Abstract No 111428)

Translation: Mixtures of copper oxychloride and zineb in ratios of 1:1.5, 1:6
and 4:1 freshly prepared immediately before spraying had greater effectiveness
in controlling apple tree mite and grape mildew than did the components
applied separately. The most effective was a mixture with a ratio of 1:1.5.
A mixture prepared with the same ratio of components as in Cuprosan Super
D was just as effective in field tests as the latter.

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USSR

UDC 577.1:547.963.3:612.8.015

VORONKA, G. Sh., DEMIN, N. N., RUBINSKAYA, N. I., and SOLOV'YEVA, I. A.,
Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

"RNA Content of Neurons and Their Glial Satellite Cells in the Supraoptic
Nucleus of Rats During Natural Sleep, Deprivation of the REM Phase, and
Amphetamine Insomnia"

Kiev, Ukrain's'kiy Biokhimichniy Zhurnal, No 6, 1972, pp 712-717

Abstract: During natural sleep the RNA concentration in the cytoplasm of
neurons in the supraoptic nucleus of the hypothalamus and in the glial satellite
cells remains virtually unchanged. In rats deprived of REM sleep, the RNA
concentration in the neurons likewise scarcely changes but increases markedly
in the neuroglia. However, the absolute RNA content decreases in the neurons
(especially after the first day) while remaining unchanged in the surrounding
neuroglia. Insomnia induced by amphetamine injections reduced the absolute
RNA content in all the cells, but does not alter the RNA concentration. During
sleep after partial and complete 96 hours' insomnia, the RNA content remains
low in the neurons but returns to the normal level in the neuroglia.

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033

TITLE--CATALYTIC REACTIONS IN AN ULTRASONIC FIELD

UNCLASSIFIED
PROCESSING DATE--04DEC70
-U-

AUTHOR--(02)-MALTSEV, A.N., SOLOVYEVA, I.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(4), 1092-4

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--AMMONIA, ULTRASONIC EFFECT, CHEMICAL REACTION RATE, METAL
CATALYST, AMMONIA, CHEMICAL SYNTHESIS, HYDROGEN, NITROGEN, AQUEOUS
SOLUTION, HYDROGEN PEROXIDE, PLATINUM, RHENIUM, PALLADIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3004/0898

CIRC ACCESSION NO--AP0131484

STEP NO--UR/0057/70/044/004/1092/1094

UNCLASSIFIED

2/2 033

CIRC ACCESSION NO--AP0131484
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--04DEC70

ABSTRACT. THE SYNTHESIS OF AMMONIA BY USING AN ULTRASONIC FIELD ACTION ON A WATER MIXT. OF N SUB2 AND H SUB2 IN THE PRESENCE OF PT, RH, AND PD BLACK GAVE 2-6.5 TIMES HIGHER YIELDS OF AMMONIA. BEST RESULTS WERE ACHIEVED WITH RH. BY STUDYING THE DECOMPN. OF H SUB2 O SUB2 IN THE ULTRASONIC FIELD, IN THE PRESENCE OF METAL CATALYSTS, IT WAS FOUND THAT THE ACTIVITY OF PT BLACK INCREASES 10 TIMES, OF RH BLACK 2.5 TIMES, WHILE THE ACTIVITY OF PD BLACK DECREASED. THE DIFFERENCE IN ACTIVITY DEPENDS ON THE AMT. OF CATALYST. BY CHANGING FROM 5 MG TO 1 MG THE ACTIVITY OF PT INCREASES AS MUCH AS 4.5 TIMES.

FACILITY: KHIM. FAK., MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

SOLOV'YEVA, L. A.

"Study of the Time of Attainment of One Class of Markov Processes"

Teoriya Veroyatiostey i mat. Stat. Mezhd. Nauch. sb. [Theory of Probabilities and Mathematical Statistics, Interdepartmental Scientific Collection], 1972, No 7, pp 146-151 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V102 by the author).

Translation: A random walk is studied in the set of integers, in which the probabilities of transition depend on the sign of the preceding jump. For the case when jumps upward are possible only by one, while jumps downward may be of arbitrary length, conditions characteristic for the time of attainment of any positive level are presented.

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ABSTRACTS OF ARTICLES PUBLISHED IN THIS ISSUE
[Abstracts: Moscow, Vsesoyuznyi Akademicheskii Nauchnyi Tsentr, No 2,
1972, p 94]

"Medicobiological Investigations Dealing with the Use of Estrogens as
Growth Stimulating Agents," by A.A. Pokrovskiy, M.P. Nesterin, G.P. Vavilina,
Ye.Ye. Ryazantseva, L.Ya. Solov'yeva, p. 3.

As a result of medicobiological examination of meat products obtained
from bull calves stimulated with diethylstilbestrol, it was shown that the
recommended method of using this hormone does not rule out the possibility
of retention in subproducts of meat of residual quantities of this agent.
On the basis of the data obtained and the literature, with due consideration
of possible adverse effects on their development and change in sex gland function
of animals, the authors conclude that it is impossible to use this preparation
in animal breeding.

There are eight tables, one illustration; bibliography lists 118 items.

"Experience with Vitamin E Supplement for Bicycle Racers and Skiers,"
by Ye.A. Sakayeva, V.V. Yefremov, p. 52.

A study was made of the effect of different intensities of physical
stress on vitamin E availability in the organism of cyclists and skiers,
during winter sport meets. As a result of the study it was found that the
E content in the blood serum of the athletes a considerable decline in vitamin
E content in the blood serum of 50-150 mg for cyclists who trained for 1.5-2
200-300 mg for skiers who trained for 3-4 hours raises the blood serum
vitamin E level and results in greater efficiency of the athletes.

Two illustrations; bibliography lists nine items.

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"A True Antrumectomy Technique in Surgery for Peptic Ulcers," by
Yu.E. Pavlov, A.A. Glinberg, I.I. Lukonova, p. 72.

A method is described for pinpointing the boundaries of the antral
portion of the stomach during surgical interventions using 2% solution of
Congo red dye as an indicator on the gastric mucosa. The method has been
developed experimentally and used in clinical practice on 30 patients with
duodenal and gastric ulcers; this revealed that it is simple, safe, and
permits performance of a true antrumectomy, in other words, it permits the
precision of a functionally substantiated sparing operation on the stomach.

Two illustrations; one table; bibliography lists 24 items.

- END -

10,657
CSO: 1847-W

ENDOCRINOLOGICAL INVESTIGATIONS DEALING WITH THE USE OF ESTROGENS AS GROWTH STIMULATING AGENTS

(MC: 613.281:636.084.52:615.357.651)

Article by A.A. Petrovskiy, M.F. Nestler, G.P. Vavilina, Ya. Ye. Benimiseva, I. Ya. Solov'yev, Institute of Nutrition, USSR Academy of Medical Sciences, Moscow, Russia, Vestnik Akademii Meditsinskikh Nauk SSSR, Russian, No 2, 1972, pp 3-15]

In the last few years there has been intensive discussion in the special literature of the desirability of using various growth stimulants on farm animals (K.I. Barulin and Yu.N. Shamberev, 1970).

Among such biostimulants, some attention is being given to sex hormones and especially the synthetic analogues of estrogens. Proposals made in this area are based on experimental investigations conducted in the 1940s which revealed that androgens and estrogens (Kochukian, 1935, 1946; Albrighet, 1942; Kruksemper, 1953) have a definite anabolic effect.

It was shown that when using the same number of fodder units, animals receiving androgens and estrogens leads to a reliable increase in weight and with increased moisture and fat content in tissues for androgens by specific-related distinctions.

In the early 1950s, the research foundation of Leon (College) received a patent for using diethylstilbestrol, a synthetic estrogen analogue, to fatten bull calves, and soon after this their suggestion was sanctioned by the Food and Drug Administration. This method consisted of adding 10 mg diethylstilbestrol daily to the animal's fodder. In 1953, the practice was also adopted of subcutaneous implantation of a diethylstilbestrol pill.

It must be noted that an increased weight gain is obtained when using this hormone only if a specific fodder composition is used. In particular, thus, it was noted that with an 11 percent protein content in the diet there was a marked anabolic effect, with 8 percent protein content in the diet there did not have a beneficial effect on weight gain (Snapp and Newman, 1962). The

USSR

UDC: 681.3.06:51

SMIRNOVA, T. N., ALEKSANDROVA, A. A., RYBAKOVA, Yu. V., SOLOV'YEVA, N. A.
"The PRORAB $\Pi_1(P, v)$ M-20 Computer"

Zap. nauchn. seminarov Leningr. otd. Mat. in-ta AN SSSR (Notes of the Scientific Seminars of the Leningrad Department of the Mathematics Institute of the Academy of Sciences of the USSR), 1970, 18, pp 31-75 (from RZh-Kibernetika, No 7, Jul 71, Abstract No 7V733)

Translation: The authors describe the PRORAB $\Pi_1(P, v)$ M-20 computer which can perform operations not only with algebraic and trigonometric polynomials of an arbitrary number of independent variables, but also with objects of another nature, in particular with "perforated" matrices and vectors. The elements of the $\Pi_1(P, v)$ M-20 are: 1) the base M-20 computer with a single operational memory array; 2) the PRORAB $\Pi_1(P, v)$; 3) a library of programs of operations which consists of two divisions: a division of programs of polynomial operations, and a division of programs of operations on "perforated" data blocks. The PRORAB $\Pi_1(P, v)$ program and a set of programs of operations on "perforated" data blocks are given in "M-20" computer codes. V. Mikheyev.

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UNCLASSIFIED
TITLE--CONDITIONS OF FORMATION OF ANTIBODIES TO DNA AND THEIR PATHOGENETIC
SIGNIFICANCE (EXPERIMENTAL STUDIES) -U-
AUTHOR--SOLOVYEVA, N.A.
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 3,
PP 91-95
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--ANTIBODY, DNA, RABBIT, ALBUMIN, SKIN DISEASE, COLLAGEN
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY-REEL/FRAME--1988/1517
CIRC ACCESSION NO--AP0106273
STEP NO--UR/0016/70/000/003/0091/0095
UNCLASSIFIED

2/2 031

CIRC ACCESSION NO--AP0106273
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--02OCT70

ABSTRACT. DIFFERENT GROUPS OF RABBITS WERE IMMUNIZED WITH NATIVE AND DENATURED DNA, AS WELL AS BY THEIR CONJUGATES WITH METHYLATED BOVINE ALBUMIN (MBSA). ANTIBODY FORMATION TO NATIVE AND DENATURED DNA WAS DETERMINED WITH THE AID OF PASSIVE HEMAGGLUTINATION REACTION. WHEN DENATURED DNA WAS ADMINISTERED IN COMBINATION WITH MBSA THE FORMATION OF ANTIBODIES WAS ACCELERATED AND MORE INTENSE THAN AFTER INJECTION OF DENATURED DNA ALONE. ADMINISTRATION OF NATIVE DNA IN THE SAME DOSE AS DENATURED DNA WITH OR WITHOUT MBSA FAILED TO STIMULATE THE ANTIBODY SYNTHESIS TO NATIVE DNA. THE ABSENCE OF MORPHOLOGICAL CHANGES CLAIMED AS PATHOGNOMONIC OF SYSTEMIC LUPUS ERYTHEMATOSUS IN ANIMALS DESPITE A LONG DURATION OF IMMUNIZATION (ABOUT 6 MONTHS), RENDERS DOUBTFUL THE LEADING ROLE OF DNA ANTIBODIES IN LUPUS AND OTHER COLLAGENOSSES.

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--02JCT70

TITLE--SLIME FORMATIONS IN SOME ACTINOMYCETES OF
HYGROSCOPIC TYPE -U-
AUTHOR--(02)-RUDY, S.M., SOLOVYEVA, N.K.

COUNTRY OF INFO--USSR

SOURCE--MIKROBIOLOGIYA, 1970, VOL 39, NR 1, PP 101-108

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ACTINOMYCETES, BIOLOGIC STAIN, SOIL MICROBIOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1990/1405

CIRC ACCESSION NO--AP0109467

STEP NO--UR/0220/70/039/001/0101/0108

UNCLASSIFIED

2/2 014

CIRC ACCESSION NO--AP0109467
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--02OCT70

ABSTRACT. MORPHOLOGICAL AND PHYSIOLOGICAL PROPERTIES AS WELL AS CONDITIONS FOR PRODUCTION, MICROSCOPIC STRUCTURE AND CYTOCHEMISTRY OF PECULIAR FORMATIONS (CONGLOMERATES) PRODUCED ON AERIAL MYCELIUM UNDER CERTAIN CONDITIONS OF CULTURAL GROWTH WERE STUDIED IN CULTURES ISOLATED FROM SOIL AND SIMILAR TO ACTINOMYCES HYGROSCOPICUS (CHARACTERISTIC BLACKENING, WETTING OF AERIAL MYCELIUM). CONGLOMERATES ARE FORMED ON MATURE SPOREFORES LOOKING LIKE SMALL FISTS. SPECIAL STAINING REVEALED THAT THESE FORMATIONS WERE SLIME OF POLYSACCHARIDE NATURE. CHARACTERISTIC MACROSCOPIC STRUCTURE OF AERIAL MYCELIUM IN ACT HYGROSCOPICUS SEEMS TO BE DUE TO SECRETION OF SLIME AND NOT TO HYDROSCOPICITY OF AERIAL MYCELIUM.

UNCLASSIFIED

Acc. Nr.: **AP0029333**

PRIMARY SOURCE: Antibiotiki, 1970, Vol 15, Nr 1, pp 14-18

Ref. Code: UR 0297

ISOLATION AND IDENTIFICATION OF ANTIBIOTIC 6604-4
Lokshin, G.B.; Tayg, M.M.; Kuzovkov, A.D.;
Solov'yeva, N.K.
National Institute for Antibiotics, Moscow.

An actinomycetous culture 6604-4 isolated from Rumanian soils is described. It is classified as *Act. roseolilacinus* sp. nov. An antibiotic isolated from the culture fluid of the actinomycele was identified with actiliazic acid by its chemical, spectral and mass-spectrometric analyses.

REEL/FAME

19680905

gm

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UDC 576.851.589:615.779

USSR

RAUTENSHTEYN, Ya. I., KRUKOVSKAYA, G. Ye., BLOKHINA, T. P., and SOLOV'YEVA, N. Ya., Institute of Microbiology, Academy of Sciences USSR, Moscow

"The Production of Virulent Mutants of Temperate Phages of Lysogenic Cultures of the *Bacillus thuringiensis* Group by the Antibiotic Vancomycin"

Moscow, Mikrobiologiya, Vol 41, No 1, Jan/Feb 72, pp 177-178

Abstract: Fifty-one strains of the following varieties of *Bacillus thuringiensis* were tested: var. *galleriae*, *dendrolimus*, *caucasicus*, *alesti*, and *Bac. thuringiensis*, I serotype. *Bacillus cereus*, *Bac. insectus*, and a pigmented strain similar to *Bac. insectus* were tested simultaneously. Virulent mutants were produced from the fresh growth of all 16 strains of *Bac. thuringiensis* var. *galleriae* cultured on meat-peptone agar to which two drops of vancomycin were added in a concentration of 100 g/ml. Some of the strains were affected by smaller antibiotic concentrations. The presence of a virulent phage was confirmed by its isolation and by testing its multiplication in the homologous bacterial culture from which it was isolated. Vancomycin failed to produce similar results in other subspecies tested.

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177 018 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--OBTAINING OF AND SOME PROPERTIES OF VIRULENT MUTANTS OF TEMPERATE
PHAGES OF A POLYLYSOGENIC PROACTINOMYCES (NOCARDIA) FRUCTIFERI -U-
AUTHOR--(05)-RAUTENSHTEYN, YA.I., TIKHONENKO, A.S., SOLOVYEVA, N.YA.,
BELYAYEVA, N.N., FILATOVA, A.D.
COUNTRY OF INFO--USSR

SOURCE--IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA, 1970, NR 2,
PP 272-282
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PHAGE, ACTINOMYCES, ANTIBIOTIC, MICROORGANISM MUTATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1990/1376

STEP NO--UR/0216/70/000/002/0272/0282

CIRC ACCESSION NO--AP0109450

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109450

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROACTINOMYCES (NOCARDIA) FRUCTIFERI 5339 CULTURE PROVED TO BE POLYLYSOGENIC. ALL THE TEMPERATE PHAGES PRESENT IN THIS CULTURE HAVE SHOWN HIGH SENSITIVITY TO THE ANTIBIOTIC RUBOMYCIN. AT A CONCENTRATION OF 140 GAMMA-ML OF A RUBOMYCIN A 100PERCENT INACTIVATION OF ALL THE PHAGE PARTICLES TAKES PLACE. TREATMENT WITH THIS ANTIBIOTIC AT CONCENTRATIONS EQUAL TO 0.25-20 GAMMA-ML ON FREE PHAGE PARTICLES OF THE EXPERIMENTAL CULTURE AND TREATMENT OF THE LYSOGENIC CULTURE WITH CONCENTRATIONS OF 0.15-100 GAMMA-ML CAUSED THE APPEARANCE OF VIRULENT MUTANTS, ABLE TO LYSE THE HOST CULTURE. SPONTANEOUS FORMATION OF VIRULENT MUTANTS WAS OBSERVED AS WELL. COMPARATIVE INVESTIGATION OF THE VIRULENT MUTANTS SHOWED THAT JUDGING BY THE MORPHOLOGY OF THE NEGATIVE COLONIES THEY MAY BE SUBDIVIDED INTO SIX TYPES WHEREAS ACCORDING TO THE SPECTRA OF LYTIC ACTION, ANTIGENIC PROPERTIES AND PHAGE MORPHOLOGY THEY FALL INTO THREE DISTINCT TYPES. THE PHAGES OF THE SAME SEROTYPE ARE IDENTICAL AS TO THE MORPHOLOGY OF THE PARTICLES. ON THE OTHER HAND IN SOME CASES VIRULENT MUTANTS BELONGING TO THE SAME SEROTYPE MAY DIFFER AMONG THEMSELVES WITH RESPECT TO NEGATIVE COLONIES MORPHOLOGY AND THE LYTIC SPECTRUM CHARACTERISTICS. THE FINE STRUCTURE AND SIZE OF VIRULENT MUTANTS PARTICLES ARE DESCRIBED ON THE BASIS OF RESPECTIVE ELECTRON MICROPHOTOGRAPHS. FACILITY: INSTITUTE OF MICROBIOLOGY, ACADEMY OF SCIENCES USSR. FACILITY: INSTITUTE OF MOLECULAR BIOLOGY ACADEMY OF SCIENCES USSR.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--THERMODYNAMIC PROPERTIES OF MIXED SOLUTIONS OF ELECTROLYTES. VII.
INFLUENCE OF THE NATURE OF ION HYDRATION ON THE SIGN OF THE HEAT OF
AUTHOR--(03)--KARAPETYANTS, M.KH., VLASENKO, K.K., SOLOVYEVA, S.G.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(2) 541

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--THERMODYNAMIC PROPERTY, ELECTROLYTIC SOLUTION, AQUEOUS
SOLUTION, SILVER NITRATE, SODIUM NITRATE, POTASSIUM NITRATE, ENDOTHERMIC
EFFECT, EXOTHERMIC EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0469

STEP NO--UR/0076/70/044/002/0541/0541

CIRC ACCESSION NO--AP0107075

UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--A0107075

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE HEAT OF MIXING DELTS H SUBM WAS DETD. FOR THE SYSTEMS AQ. AGNO SUB3 PLUS AQ. NANO SUB3 (SYSTEM 1) AND AQ. AGNO SUB3 PLUS AQ. KNO SUB3 (SYSTEM 2), AT ISOMOLAR CONDITIONS AND 25DEGREES. SYSTEM (1) WAS EXOTHERMIC (DELTA H SUBM EQUALS NEGATIVE 11 AND NEGATIVE 27 KCAL-MOLE FOR THE CONCNS. 1.0 AND 3.5 M, RESP.), WHILE SYSTEM (2) WAS ENDOTHERMIC (DELTA H SUBM EQUALS 9 AND 20 KCAL-MOLE, RESP., FOR THE ABOVE CONCNS.). THE DATA INDICATE THAT THE AG PRIME POSITIVE ION EXHIBITS A STRUCTURIZING EFFECT ON THE SOLUTE IN CONCD. SOLNS.

UNCLASSIFIED

USSR

UDC 547.917+639.94

KHOMENKO, V. A., PAVLENKO, A. F., SOLOV'YEVA, T. F., and OVODOV, YU. S.,
Institute of Biologically Active Substances, Far Eastern Scientific Center of
the USSR Academy of Sciences

"Polysaccharides of the Brown Algae. IV. Fragmentation of the Sargassan and
Pelvetian Molecules"

Tashkent, Khimiya Prirodnykh Soyedineniy, No 4, 1971, pp 393-396

Abstract: It was desired to discover simpler fragments of sargassan and pelvetian, which are polysaccharides previously investigated by this research group and derived from the algae *Sargassum pallidum* and *Pelvetia Wrightii*, respectively.

Assuming the presence of a glucuronide chain, the authors subjected these biopolymers to alkali degradation (with NaOH) in the presence of sodium borohydride, and also induced hydrolysis in these substances. Treating sargassan and pelvetian with dilute sulfuric acid produced xylose, fucose and a series of digosaccharides, with detachment of a polypeptide in the form of a dark-brown precipitate. When degraded with alcohol and subjected to complete acid hydrolysis, these polysaccharides yielded galactose, mannose, xylose, fucose and glucuronic acid, along with glucuronolactones.

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USSR

KHOMENKO, V. A., et al., Khimiya Prirodnkh Soyedineniy, No 4, 1971, pp 393-396

Based on these results and on chromatographic data, the presence of a linear, high-molecular fragment in both the sargassan and the pelvetian molecules was concluded.

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USSR

SOLOV'YEVA, T. F., et al., Khimiya Prirodnikh Soyedineniy, No 4, 1971, pp 396-398

It was thus demonstrated that in pelvetian and sargassan, the mono-saccharide groups exhibit a high degree of substitution (sulfate groups, branching); while those groups of xylose which are part of the polysaccharides are to a considerable degree oxidized by the periodate.

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Acc. Nr.

AP0038569

Abstracting Service:
CHEMICAL ABST.

4-70

Ref. Code
UK0000

S

67362z Molecular weight distribution of polyolefins. Bulov.
H. P.; Lisitskaya, A. P.; Solov'eva, T. I.; Chirkov, N. M. (Inst.
Chem. Phys., Moscow, USSR). *Eur. Polym. J.* 1970, 6(1), 29-40
(Eng). Mol. wt. distributions of polyethylene and ethylene-pro-
pylene copolymers prep'd. with Ziegler-Natta catalysts were
studied by pptn. fractionation. The mol. wt. distribution
in polyethylene prep'd. in the presence of a sol. catalytic system,
(C₃H₅)₂TiCl₂-Et₂AlCl was bimodal owing to the existence of
two types of active centers. The effects of polymn. time, cata-
lyst and solvent natures, and presence of propylene in the ethyl-
ene on mol. wt. distribution were investigated. The fractionation
results were correlated with the kinetic data on ethylene polymn.
The possible mechanism of ethylene polymn. in an alkyl halide
medium in the presence of (C₃H₅)₂TiCl₂-Et₂AlCl was discussed
with respect to the data on mol. wt. distributions.

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USSR

UDC 669.712

VYDRIK, G. A., and SOLOV'YEVA, T. V.

"Synthesis of Cesium β -Alumina

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 8,
No 2, 1972, pp 414-415

Abstract: As we know, β -alumina is not a modified form of alumina, but a rather numerous group of high-alumina aluminates, joined by similarity of their crystalline lattice, related to the hexagonal system. Based on earlier studies, an attempt was made to synthesize cesium β -alumina, more precisely cesium aluminate. The material is synthesized by first synthesizing barium aluminate, then performing a substitution reaction. X-ray studies of barium aluminate and cesium aluminate indicate the similarity of the structure of the two compounds. The difference between them consists in the additional reflections and increased interplanar separations of the cesium aluminate.

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USSR

UDC 621.74

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SIDORIN, I. I., Doctor of Technical Sciences, Professor, SILAYEVA, V. I., Candidate of Technical Sciences, Docent, SLOTIN, V. I., Candidate of Technical Sciences, SOLOV'YEVA, T. V., Candidate of Technical Sciences, Docent, and ESKIN, G. I., Candidate of Technical Sciences, Moscow Higher Technical School imeni N. E. Bauman

"Obtaining a Composite Casting Alloy for Percussive Rock Drills by Means of Ultrasonic Treatment of the Melt"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Mashinostroyeniye, No 8, 1972, pp 116-121

Abstract: A composite alloy for cumulative-action percussive rock drills is obtained on the basis of alloy MVTU-3. This alloy has high hardness and strength values, and possesses considerable brittleness and fragmentability. In order to make the alloy still stronger, and to increase its brittleness and fragmentability, refractory carbide particles and oxides, of varied dispersity, were introduced into the alloy in combination with ultrasonic treatment of the molten metal. Best results were obtained with silicon carbide.

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USSR

SIDORIN, I. I., et al., Izvestiya Vysshykh Uchebnykh Zavedeniy, Mashinostroyeniye, No 8, 1972, pp 116-121

As a result of ultrasonic treatment in the molten metal, intensive cavitation processes originate, which bring about dispersion and destruction of the refractory particles; this facilitates wetting of the particles by the base metal, and facilitates their uniform distribution in the composition material. Study of the mechanical properties of compositions of varied content showed that they are determined by the nature of their components, as well as by the quantity and dispersity of the strengthening particles. The properties of the obtained composition alloy in a cast state are presented, before and after ultrasonic treatment. The obtained composition is recommended for the production of cumulative-action percussive rock drill parts operating at high hydrostatic pressures and temperatures of 100-150° C. 1 table. 5 figures. 3 references.

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Public Health, Hygiene and Sanitation

USSR

SOLOV'YEVA, V., Candidate of Medical Sciences

"Fatigue - Its Causes and Prevention"

Moscow, Meditsinskaya Gazeta, 17 Mar 72, p 2

Abstract: At the Laboratory of the Physiology work, Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, studies were conducted from the standpoint of reduction of fatigue and improvement of efficiency reduced by fatigue in work involving a mental strain in addition to considerable physical effort. This included work done by print shop proofreaders, airport dispatchers, female telegraph operators, operators of control panels, simultaneous interpreters, scientific workers, and others. Time studies to determine efficiency were carried out and physiological shifts due to fatigue measured. It was established that proofreaders in the course of their work, in addition to visual fatigue, developed a state in which the intensity and mobility of nervous processes were reduced and protective inhibition was exhibited. By improving the lighting, organizing the working day more effectively, and introducing appropriate rest periods, the efficiency of the work done by proofreaders could be increased by 10%. In addition to laboratory studies, observations on airport dispatchers, operators of Mosenergo control panels, subway motormen and dispatchers, and television directors

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USSR

SOLOV'YEVA, Meditsinskaya Gazeta, 17 Mar 72, p 2

were carried out under actual working conditions. It was established that in workers of this type, physiological shifts during the performance of their duties depended less on the duration of the work than on the mental load, the volume of information perceived, the responsibility involved, and quite particularly the emotional strain. Under conditions involving elements of a dangerous mishap, even experienced airport dispatchers and operators of power system control panels showed an increase of arterial blood pressure by 25-30 mm and an increase in the blood sugar content by a factor more than 1.5 when a critical situation developed during the peak hour. On the basis of the results obtained, it was recommended that the length of time spent in actual operation of control panels be reduced, periods of work and rest alternated in a more appropriate manner, and the sanitary and hygienic conditions pertaining to the work be improved. There are types of work in which a rest period cannot be introduced whenever fatigue sets in. This includes the work of subway motormen, who develop fatigue even after 3-4 hrs of continuous work. By using special equipment, the physiological aspects of fatigue were studied on subway motormen at a distance while they operated trains. At the time of an unexpected stoppage of a subway train due to a short circuit, the motormen showed an increase in the frequency of cardiac contraction to 160 from 70 per minute, an EKG that reflected a disturbance in heart activity, and abrupt

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USSR

SOLOV'YEVA, V., Meditsinskaya Gazeta, 17 Mar 72, p 2

changes in the arterial blood pressure and the blood sugar level. The most frequent diseases among subway motormen are those of the cardiovascular system. To reduce fatigue and its consequences among them, the working day was shortened to 6 hrs, prophylactic measures were introduced, the lighting was improved, and measures were taken to eliminate noise and to organize the alternation of work and rest more effectively. Comparative studies on persons engaged in different occupations involving mental work (including scientific workers and engineers) indicated that the bioelectric activity of the brain shows characteristic traits and changes that depend on the complexity of the work and the responsibilities connected with it. The degree of attention is a reliable index of the intensity of mental work. Under conditions involving strain or fatigue, shifting (switching over) of attention plays a considerable role. By using the method of searching for figures in the Schulte-Platonov table of figures, the concentration, distribution of attention, and capacity for switching over attention can be determined. Another important criterion for evaluating the intensity of work, particularly at control panels, is the rate of conversion of operational information. By correlating this rate with physiological indexes, the degree of strain involved in the work can be determined. Of importance in increasing efficiency and reducing fatigue are rest, 3/4

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SOLOV'YEVA, A., Meditsinskaya Gazeta, 17 Mar 72, p 2

adequate nutrition, sleep physical exercise, and harmonious social relations in the working community. Research is being done at present on the use of drugs as a means of increasing the capacity for mental work. Promising results in this respect have been obtained by applying mental stimulants and tranquilizers.

4/4

1/2 033 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--CONTACT EXTRUSION METHOD FOR WELDING THERMOPLASTIC MATERIALS -U-
AUTHOR-(03)-SOLOVYEV, V.P., SOLOVYEVA, V.A., MATSYUK, L.N.
COUNTRY OF INFL--USSR
SOURCE--SVAR. PROIZVOD. 1970, (2), 24-5.
DATE PUBLISHED-----7C

SUBJECT AREAS--MATERIALS, BECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--ETHYLENE, PROPYLENE, COPOLYMERIZATION, POLYPROPYLENE, CHEMICAL
DEGRADATION, THERMAL EFFECT, WELDING TECHNOLOGY, THERMOPLASTIC MATERIAL

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REFERENCE--3006/1322 STEP NO--08/0135/107006/002/0024/0025
CIRC ACCESSION NO--AP0134993

2/2 033

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0134996

ABSTRACT/EXTRACT--(U) GP-G- ABSTRACT. OPTIMUM TEMPS., GIVING BOND STRENGTHS APPROX. THOSE OF THE ORIGINAL MATERIALS, FOR CONTACT EXTRUSION WELDING OF LOW, AND HIGH, D. POLYETHYLENE, ETHYLENE PROPYLENE COPOLYMER, POLYPROPYLENE, AND "PDV" ARE 180-90DEGREES, 230-40DEGREES 230-40DEGREES, 250DEGREES, AND 190-200DEGREES, RESP., FOR THE WELDING MIXT. EMANATING FROM A HEATED NOZZLE IN CONTACT WITH THE SEAM. THESE TEMP. VALUES LAY IN A 20-70DEGREE RANGE OF CONST. BOND STRENGTHS FOR THESE WELDED MATERIALS BEFORE FURTHER TEMP. INCREASES DECREASED BOND STRENGTHS DUE TO POLYMER DEGRADATION. ARTICLES IS GREATER THAN 5 MM IN THICKNESS REQUIRED PRELIMINARY TREATMENT OF THE EDGES BY CONTACT EXTRUSION OF MOLTEN MIXTS. AT THE JOINT AT 2-5 KG-CM PRIME2, PREFERABLY 1.5-3 KG-CM PRIME2. A CHART FOR CETO. PREFERRED OPERATING CONDITIONS (TEMPS., QUANTITIES, RATES, THICKNESSES) IS GIVEN. THE METHOD GAVE STRONG BONDS BETWEEN A LOW D. POLYETHYLENE ALK. STORAGE BATTERY JACKET AND A HIGH D. POLYETHYLENE COVERING.

UNCLASSIFIED

USSR

UDC: 536.246

BAKALIN, Yu. I., GOLUBENKO, G. G., KOLYKHAN, L. I., SEN'KO, A. S., SOLO-
V'YEVA, V. H.

"Results of an Experimental Study of Heat Exchange During Boiling of Nitrogen
Tetroxide in a Vertical Tube"

V sb. Dissotsiruyushch. gazy kak teplonositeli i rak. tela energ. ustanovok
(Dissociating Gases as Heat-Transfer Agents and Working Fluids in Power
Plants--collection of works), Minsk, "Nauka i tekhn.", 1970, pp 289-293
(from RZh-Aviatsionnye i raketnyye dvigateli, No 3, Mar 71, Abstract No
3.34.118)

Translation: A description is presented of the experimental installation,
measurement procedure and data processing method. Results are given from a
study of heat exchange during boiling of N_2O_4 in a vertical tube with natural
circulation in the pressure region of 2-50 absolute atmospheres under thermal
loads of $(0.4-0.6) \times 10^5$ kcal/m²·hr. It is noted that heat exchange during
boiling of a chemically reacting system differs considerably from heat ex-
change during boiling of pure inert substances. Three illustrations, bibli-
ography of five titles. Resumé.

1/1

USSR

SOLOV'YEVA, V. P., Candidate of Medical Sciences

"The Physiological Cost of Mental Work"

Moscow, Zdorov'ye, No 12, Dec 70, pp 10-11

Abstract: Physiological shifts and shifts in mental reactions produced by mental work and work requiring mental concentration were studied. A comparative study was conducted of the reactions of proofreaders, whose activity involves mental effort, and of female watch assembly workers, whose activity does not require mental work. Motor reflexes (pushing of an appropriate button) in response to light and sound signals and, subsequently, in response to verbal announcements of these signals were studied. At the end of the working, proofreaders made more mistakes in pushing the right button than watch assembly workers. Furthermore, the second signal system of proofreaders, as shown by the relative preponderance of errors after verbal announcements, was impaired to a significantly greater extent than the first (response to direct signals). A much smaller difference between the functioning of the two signal systems was found for watch assembly workers. Reversal of the order of two different light signals (e. g., red and yellow), after one of which (e. g., the red light) a button had to be pushed, resulted in

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SOLOV'YEVA, V. P., Zdorov'ye, No 12, Dec 70, pp 10-11

a greater number of errors for proofreaders than for watch assembly workers. Studies of the reactions of workers at electric control panels, conducted by the Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, indicated that motor reactions were impaired to a greater extent and that the number of errors increased when the amount of information that had to be converted was greater (e.g., for dispatchers of the electric power network of Mosenergo vs. those of the power cable network of the same system, with a workload for the first group higher by 20-40% than for the second). As shown by the EEF, responsible dispatchers of the Mosenergo cable network were in a more advanced stage of mental fatigue after the peak load than their subordinates, although the latter did the same kind of work at a performance level of equal intensity. The rate of conversion of information for responsible dispatchers was lowered by a factor of five than that for their subordinates. Visual tests showed a greater degree of impairment of reactions for the first group than for the second. Tests similar to those for dispatchers of the Moscow power network were conducted for operators of other control panels and at other control centers, including airport dispatchers (flight controllers), subway motormen and dispatchers, and television broadcasting directors. Nervous tension associated with mishaps such as those occurring in the

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SOLOV'YEVA, V. P., Zdorov'ye, No 12, Dec 70, pp 10-11

course of work carried out by subway motormen and television broadcasting directors was found to affect the activity of the cardiovascular system and to raise the blood sugar level. The EKG of scientists defending dissertations and of operators of power network control panels disclosed impairment of myocardial function as a result of nervous strain. On the basis of the results obtained in these studies, physical exercise periods were introduced for proofreaders and the conditions of their work (e.g., with respect to lighting) were improved, the time spent by television directors at control panels was shortened to 4.5 hours per day, the length of the work shift of subway motormen was reduced, and substitute operators were provided to replace responsible operators at power network control panels after 4 hours of work.

3/3

USSR

UDC 547.852.3'791

SOLOV'YEVA, V. V., and GUDRINIYETSE, E. YU., Riga Polytechnical Institute

"Reactions of Azidoheterocyclic Compounds with C-H-Acids. IV. Reaction of 1-Phenyl-4-azido-5-chloropyridazone-6 With Some β -Dicarbonyl Compounds"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 2, Feb 73, pp 256-258

Abstract: 1-Phenyl-4-azido-5-chloropyridazone-6 (I) reacts with acetylacetone, benzoylacetone, dibenzoylmethane, and acetoacetic ester in presence of triethylamine, yielding 1,2,3-triazolylpyridazones-6; with diethyl malonate and acetoacetic ester in presence of sodium ethoxide the products are diazidocarbonyl derivatives. Dimedon and indandione-1,3 reacted with (I) yielding 1-phenyl-4-amino-5-chloropyridazone-6, 2-diazodimedone, and 2-diazoindanedione-1,3 respectively.

1/1

Acc. Nr: **AP0051909**

Ref. Code: **UR0219**

PRIMARY SOURCE: Byulleten' Eksperimental'noy Biologii i
Meditsiny, 1970, Vol **69**, Nr **2**, pp **32-35**

PARTICIPATION OF THE POSTERIOR NUCLEI OF THE HYPOTHALAMUS IN THE
MECHANISM OF DEVELOPMENT OF EXPERIMENTAL ALLERGIC ENCEPHALO-
MYELITIS AND OF POSTDIPHTHERITIC POLYNEURITIS

V. V. Mikhaylov, N. G. Astaf'eva, V. Yu. Solov'yeva
Saratov Medical Institute

In the guinea pigs subjected to sublethal doses of diphtheritic toxin or immunized by encephalitogenic mixtures, the development of paralysis of the skeletal muscles was preceded by changes in the functional activity of the hypothalamo-hypophyseal-adrenal system manifested by disturbances in osmotic reflexes and by accumulation of antinerve antibodies in the blood. During electrolytic destruction or pharmacological switching-off by sympatholytic agents, the posterior nuclei of the hypothalamus of the animals retained adequate osmotic reflex to water loading while synthesis of antinerve antibodies markedly decreased. At this background during diphtheritis and experimental allergic encephalomyelitis, the guinea pigs developed paralysis of the skeletal muscles 4-5 days later and these animals survived 6-7 days over the control.

REEL/FRAME
19820392

2-ke

USSR

UDC: 8.74

SOLOV'YEVA, Ye. A.

"Mathematical Description of the Capability of a Human to Analyze the Correctness of Word Transfer Operations"

Probl. Bioniki. Resp. Mezhved. Temat. Nauch.-tekhn. Sb. [Problems of Bionics, Republic Interdepartment Thematic Scientific and Technical Collection], 1972, No 8, pp 61-67 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V589, by the author)

Translation: An algorithm is composed including checking of the main rules for hyphenation of words in the Russian language. The algorithm is programmed for the Minsk-22 computer. The program is written in an algorithmic language. A comparative description of the results of the operation of the model and psychological experiments is presented.

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USSR

UDC 616.155.392-036.11-08

KHVATOVA, N. V., LORIYE, Yu. I., SOLOV'YEVA, Ye. A., and FRENKEL', M. A.,
Hematological Department and Clinical Laboratory, Institute of Experimental
and Clinical Oncology, Academy of Medical Sciences USSR, Moscow

"Comparative Evaluation of Various Methods for Treatment of Acute Leukemia"

Moscow, Terapevticheskiy Arkhiv. Vol 43, No 5, 1971, pp 3-7

Abstract: Adult patients with acute leukemia were treated using VAMP therapy (treatment with vinristine, methotrexate, 6-mercaptopurine, and prednisolone) TsAMP therapy (VAMP therapy modified by replacing vincristine with cyclophosphane, or therapy with rubomycin S. VAMP therapy was the most effective method of treating primary acute lymphoblastic leukemia (100% complete remission), but was less effective (33% complete remission) in resistant forms of leukemia that had developed in patients already treated. It was ineffective in acute myeloblastic leukemia. The frequency of complete remissions after TsAMP therapy was 66% in primary acute lymphoblastic leukemia, 33% in resistant cases (relapses) of this disease, 14% in primary acute myeloblastic leukemia vs. 0% after VAMP therapy, and 0% in relapses in myeloblastic leukemia. Rubomycin S was the most effective drug in the treatment of primary acute myeloblastic leukemia, producing 33% of complete remissions, 1/2

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KHVATOVA, N. V., et al., Terapevticheskiy Arkhiv, Vol 43, No 5, 1971, pp 3-7

but was no more effective in relapses of this disease than the combinations of drugs applied in VAMP and TsAMP therapy. Upon treatment of acute lymphoblastic leukemia with rubomycin, the frequency of complete remissions was 66 and 14% in primary cases and relapses, respectively. Rubomycin had a more severe effect in suppressing normal hemopoiesis, particularly in acute myeloblastic leukemia, than the combinations of drugs administered in VAMP or TsAMP therapy.

2/2

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SOLOV'YEVA. YE. V.

SPRS 59008
6.75

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1-3. SOME CHARACTERISTIC FEATURES OF THE DISTRIBUTION OF UNCONTROLLED CENTERS IN PURE EPITAXIAL LAYERS OF GALLIUM ARSENIDE OBTAINED FROM NONSTOICHIOMETRIC SOLUTIONS.

Article by N. G. Milyutskiy, L. D. Subbotov, Ye. V. Solov'yeva, G. A. Kolybova, Moscow, Zhurnal tekhnicheskoy fiziki, 1972, 38(1), 1-3, 137-139, 137-139, English translation in Radiotekhnika i Elektronika, 1972, 17(1), 137-139, 137-139.

A study was made of the donor and acceptor distribution with respect to depth of the epitaxial layers of gallium arsenide obtained by the method of liquid epitaxy in a solution solution.

The investigated distribution profiles were compared with the growth conditions, the material and heat treatment of the substrate. A study was made of the effect of various conditions of etching the substrate on the electrochemical properties of the layers.

Proposals were made regarding the nature of the observed donors and acceptors.

USSR

UDC 621.315.592

SOLOV'YEVA, YE. V., MIL'VIDSKIY, M. G., State Scientific Research and Planning and Design Institute of the Rare Metals Industry of Moscow

"Scattering Characteristics of Electrons in Unalloyed Gallium Arsenide"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 5, 1972, pp 810-813

Abstract: A study was made of the scattering processes in single crystals of unalloyed n-type gallium arsenide. The temperature dependence of the electron mobility cannot be explained by scattering on the lattice vibrations and the ionized admixtures alone. It is necessary to consider an additional scattering mechanism. The additional scattering is connected with the presence in the crystals of a center with an ionization energy of ~0.1 electron volts. It is proposed that this center is not a point charge center but a complex formation (the composition of which may include lattice defects of the vacancy type) having a large scattering cross section the nature of which varies sharply on variation of the charged state of this center. Another explanation is that the additional electron scattering takes place in the space charge region and the concentration of the additional centers correlates with the number of these regions. The bases for both of these propositions are discussed.

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USSR

UDC 621.315.592

YUROVA, YE. S., SOLOV'YEVA, YE. V., KISTOVA, YE. M., D'YAKONOV, L. I., IGLITSYN, M. I., KEVORKOV, M. N.

"Autocompensation of Donors in Gallium Arsenide and the $\text{GaAs}_{1-x}\text{P}_x$ Solid Solution"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 3, 1972, pp 496-501

Abstract: A study was made of the autocompensation phenomenon (constancy of the degree of compensation in a broad alloying range) detected in films of $\text{GaAs}_{1-x}\text{P}_x$ alloyed with Te and Se and GaAs alloyed with Se. The dependence of the degree of compensation and the concentration of the compensating centers in the neutral state was obtained as a function of the composition of the solid solution. A deep level connected with compensating centers was detected, and the dependence of its activation energy on the composition of the solid solution was determined.

The study was made in the entire composition range of the solid solution and also in films of gallium arsenide alloyed with Se. The temperature range was expanded to 800° K. The degree of compensation in the $\text{GaAs}_{1-x}\text{P}_x$ close with respect to composition to GaP was determined by the curve for the temperature dependence of the charge carrier concentration by the same procedure as used

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YUROVA, YE. S., et al., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 3, 1972, pp 498-501

earlier [M. I. Iglitsyn, et al., FTP, No 4, 230, 1970]. Graphs are presented showing the degree of compensation and the concentration of the compensating defects in the neutral state as functions of the composition of $\text{GaAs}_{1-x}\text{P}_x$ crystals, the concentration of the ionized detectors as a function of the electron concentration in the films of GaAs alloyed with Se, the temperature dependence of the charge carrier concentration in the compensated samples of $\text{GaAs}_{1-x}\text{P}_x$, and the dependence of the approximate activation energy of the D' level on $\text{GaAs}_{1-x}\text{P}_x$ the composition of the $\text{GaAs}_{1-x}\text{P}_x$ crystals. The divergence between the degree of compensation observed in the GaAs crystals ($K \approx 0.5$) and the value of K obtained by extrapolating the function $K(x)$ for the solid solution to $x = 0$ is explained by the difference between the growth temperatures of these crystals $\approx 200^\circ$. The calculation of N_v^0 from the value of K in GaAs by the previously obtained formula

$$K = \frac{N_A}{N_D} = \frac{N_v^0}{N_c} e^{\frac{E_g - E_a}{kT}},$$

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YUROVA, YE. S., et al., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 3, 1972, pp 498-501

leads to a value of the same order as the value of N_v^0 in $\text{GaAs}_{1-x}\text{P}_x$ determined on heat treatment of the crystals at a temperature close to the growth temperature of the GaAs films (N_v^0 is the concentration of the compensating defects in the neutral state, N_c is the effective density of the states of the conduction band, and E_g is the width of the forbidden band).

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USSR

UDC 620.195

SOLOV'YEVA, ZH. F., FOKIN, M. N., and TIMONIN, V. A., Moscow Institute of Steels and Alloys

"Criteria for the Tendency of Titanium Alloys to Crevice Corrosion"

Moscow, Zashchita Metallov, Vol 6, No 2, Mar-Apr 1970, pp 204-206

Abstract: In neutral and weakly acid chloride-containing solutions passive titanium may become activated in crevices, which minimizes its value as an all-purpose constructional material for use in chloride media. According to current views, crevice corrosion occurs under conditions promoting the disturbance of the passive state of titanium. The possibility of complete passivation of a crevice under conditions when the metal's surface outside the crevice is passive, considerably depends on its geometric characteristics. This study assesses the applicability of concepts on passivation of extended electrodes for predicting crevice corrosion. The VTZ-1 titanium alloy involved in the experiment (Al-4.0 to 6.2; Cr-1.5 to 2.5; Mo-1.0 to 3.0; Fe-0.8; Si-0.4; and C-0.1%) was studied in a 3% NaCl solution acidified with HCl to various pH values. At the selected temperature 98°C, the incubation period of crevice corrosion caused by the action of air-oxidized films on the surface of titanium was much shorter than at regular temperature. The potentiostatic curves of the VTZ-1 alloy given in the article show

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SOLOV'YEVA, ZH. F., et al., Zashchita Metallov, Vol 6, No 2, Mar-Apr 1970, pp 204-206

that the active anodic dissolution loop indicating the possible activation of the metal appears at pH less than 0.5. In solutions of lower acidity, titanium remains passive. A diagram of the experimental model is given in the article. Upon analyzing the effect of alloying components of the metal on its tendency to crevice corrosion, it must be noted that all elements reducing the critical current density of passivation or narrowing the region of potentials of anodic active dissolution facilitate metal passivation in the crevice.

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UNCLASSIFIED
PROCESSING DATE 27 NOV 70
72-0014
TITLE--HALF LIFE OF CALIFORNIUM 252 SPONTANEOUS FISSION -U-
AUTHOR--(05)-ALEKSANDROV, B.M., BAK, M.A., BOGDANDV, V.G., BURGORKOV, S.S.,
SOLOVYEVA, Z.I.
COUNTRY OF INFO--USSR
SOURCE--AT. ENERG. 1970, 28(CT). 361-2
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY
TOPIC TAGS--HALF LIFE, CALIFORNIUM ISOTOPE, NUCLEAR FISSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/0563

STEP NO--UR/0089/70/020/000/0361/0362

ARC ACCESSION NO--AP0137648

UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--27NOV70

IRC ACCESSION NO--AP0137648

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RATIO OF THE NO. OF ALPHA
DECAYS TO THE NO. OF SPONTANEOUS FISSIONS OF PRIME252 CF IS 31.34 PLUS
OR MINUS 0.08. FROM THIS RATIO A HALF LIFE OF 8.5 PLUS OR MINUS 0.4 YR
WAS FOUND FOR THE SPONTANEOUS FISSION OF PRIME252 CF.

UNCLASSIFIED

1/2, 018 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--PROBABILITY OF FISSION WITH THE EMISSION OF LONG RANGE PARTICLES
-U-
AUTHOR--SOLOVYEVA, Z.I. S
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(2), 438-43
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--FISSION CROSS SECTION, TRANSITION PROBABILITY, ALPHA PARTICLE,
NEUTRON ENERGY DISTRIBUTION, NUCLEAR FISSION, NUCLEAR STRUCTURE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0217 STEP NO--UR/0048/70/034/002/0438/0443
CIRC ACCESSION NO--AP0105293

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0105293

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EXPTS. PROVED THAT DOUBLE AND TRIPLE FISSION PROCESSES HAVE SIMILAR MECHANISMS AND DIFFER MUTUALLY IN THEIR PROBABILITIES WHICH ARE EXPRESSED AS THE RATIO OF THE NO. OF LONG RANGE PARTICLES TO THE NO. OF DOUBLE FISSIONS, N_{SUD} . THE RATIO $FO W$ SUBALPHA EQUAL $N_{SUBALPHA}-N_{SUBD}$ IS CONSIDERED IN SUBALPHA MINUS NO. OF ALPHA PARTICLES WHICH REPRESENT 94-5PERCENT OF THE LONG RANGE PARTICLES FORMED). W SUBALPHA IS DETD. DURING THE FISSION OF NUCLEIT $W H$ MONOCHROMATIC N OF THE RESONANCE REGION, DURING SPONTANEOUS FISSION, AND DURING THE FISSION BY ACTION OF THERMAL AND REACTOR N AND OF FAST N HAVING DIFFERENT ENERGIES. THE DETN. OF A PROBABILITY OF THE LONG RANGE PARTICLE FISSION IN THE RESONANCE REGION COULD ENABLE ONE TO COMPARE SPIN CHARACTERISTICS OF RESONANCES OF BOTH DOUBLE AND LONG RANGE PARTICLE FISSION AND TO EST. THE INFLUENCE OF CHANNEL EFFECTS ON FORMING THE SYMMETRIC FISSION. HOWEVER, THE PRESENT RESULTS DO NOT ALLOW FOR THE CONSISTENT DETN. OF A DIFFERENCE BETWEEN THESE 2 KINDS OF FISSION. A CONNECTION BETWEEN THE LONG RANGE PARTICLES FISSION AND THE SYMMETRIC ONE WAS NOT VERIFIED. THE PROBABILITY OF THE LONG RANGE PARTICLES FISSION IS CLOSELY RELATED TO A CONDITION OF THE FORMATION AND EXISTENCE OF A SUBSTRUCTURE OF NUCLEAR MASS. THE RESULTS OF STUDIES PRESENTLY KNOWN ARE VALID FOR SPECIFIC CONDITIONS ONLY AND GENERAL CONCLUSION SHOULD BE OBTAINED BY FURTHER EXPTL. STUDIES OF THE COMPN. OF THE NUCLEI.

UNCLASSIFIED

1/2 007 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--ULTRA FINE CELL STRUCTURE OF THE PARENT STRAIN AND OF THE PIGMENTED
MUTANT OF PHODOPSEUDOMONAS PALUSTRIS -U-
AUTHOR--(02)-SOLOVYEVA, ZH.V., FEDENKO, YE.P.

COUNTRY OF INFO--USSR

SOURCE--MIKROBIOLOGIYA, 1970, VOL 39, NR 1, PP 109-111

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PSEUDOMONAS, BACTERIA MUTATION, CELL MEMBRANE, CYTOPLASM,
PHOTOSYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1990/1443

STEP NO--UR/0220/70/039/001/0109/0111

CIRC ACCESSION NO--AP0109503

UNCLASSIFIED

2/2 007

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109503

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PARENT STRAIN AND THE PROTOCHLOROPHYLLIC MUTANT OF RH. PALUSTRIS HAVE SIMILAR CELL STRUCTURE BUT THE MUTANT, UNCAPABLE FOR PHOTOSYNTHESIS, DOES NOT FORM PERIPHERAL LAMELLAR STRUCTURES. SUCH STRUCTURES (THYLAKIIDS) ARE FOUND IN THE CELLS OF THE PARENT STRAIN GROWN IN LIGHT BUT NOT IN THE CELLS GROWN IN DARKNESS. THIS CONFIRMS THEIR FUNCTION AS THAT OF PHOTOSYNTHETIZING APPARATUS. NO STRUCTURES SIMILAR TO MESOSOMES WERE FOUND IN THE MUTANT OR IN THE PARENT STRAIN GROWN IN DARKNESS UNDER AEROBIC CONDITIONS. THE FUNCTION OF THE RESPIRATORY APPARATUS IN RH. PALUSTRIS SEEMS TO BE CARRIED OUT BY CYTOPLASMIC MEMBRANE.

UNCLASSIFIED

1/2 007 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--ULTRA FINE CELL STRUCTURE OF THE PARENT STRAIN AND OF THE PIGMENTED
MUTANT OF PHODOPSEUDOMONAS PALUSTRIS -U-
AUTHOR-(02)-SOLOVYEVA, ZH.V., FEDENKO, YE.P.
COUNTRY OF INFO--USSR
SOURCE--MIKROBIOLOGIYA, 1970, VOL 39, NR 1, PP 109-111
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--PSEUDOMONAS, BACTERIA MUTATION, CELL MEMBRANE, CYTOPLASM,
PHOTOSYNTHESIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1990/1443 STEP NO--UR/0220/70/039/001/0109/0111
CIRC ACCESSION NO--AP0109503
UNCLASSIFIED

2/2 007

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109503

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PARENT STRAIN AND THE PROTOCHLOROPHYLLIC MUTANT OF RH. PALUSTRIS HAVE SIMILAR CELL STRUCTURE BUT THE MUTANT, UNCAPABLE FOR PHOTOSYNTHESIS, DOES NOT FORM PERIPHERAL LAMELLAR STRUCTURES. SUCH STRUCTURES (THYLAKIODS) ARE FOUND IN THE CELLS OF THE PARENT STRAIN GROWN IN LIGHT BUT NOT IN THE CELLS GROWN IN DARKNESS. THIS CONFIRMS THEIR FUNCTION AS THAT OF PHOTOSYNTHETIZING APPARATUS. NO STRUCTURES SIMILAR TO MESOSOMES WERE FOUND IN THE MUTANT OR IN THE PARENT STRAIN GROWN IN DARKNESS UNDER AEROBIC CONDITIONS. THE FUNCTION OF THE RESPIRATORY APPARATUS IN RH. PALUSTRIS SEEMS TO BE CARRIED OUT BY CYTOPLASMIC MEMBRANE.

UNCLASSIFIED

1/2 021

UNCLASSIFIED

PROCESSING DATE--02OCT70

TITLE--CHANGES IN THE ULTRASTRUCTURE OF NEURONS OF THE UPPER CERVICAL
SYMPATHETICAL GANGLION IN CATS WITH THE INTRODUCTION OF THE BLOOD SERUM
AUTHOR--(03)-SOLOVYEVA, ZH.V., KHAKHANOVA, N.L., LIDEMAN, R.R.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL NEVROPATOLOGII I PSIKHIATRII IMENI S. S. KORSAKOVA, 1970,
VOL 70, NR 4, PP 584-592
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NEURON, GANGLION, CAT, BLOOD SERUM, SCHIZOPHRENIA,
MITOCHONDRION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

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CIRC ACCESSION NO--AP0106290

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS STUDIED THE ACTION POTENTIALS IN THE SUPERIOR CERVICAL SYMPATHETIC GANGLION AND ITS ULTRASTRUCTURE IN CATS IN INTRA ARTERIAL INTRODUCTION OF THE BLOOD SERUM OF NORMALS, OF PATIENTS WITH SCHIZOPHRENIA AND NUCLEAR SCHIZOPHRENIA. THE SERUM OF NORMALS SOMEWHAT INCREASED THE AMOUNT OF LYSOSOMES IN THE NERVOUS CELLS AND DID NOT CHANGE THE ACTION POTENTIAL OF THE GANGLION. ELECTRON MICROSCOPICAL CHANGES IN INTRODUCTION OF THE SERUM OF SCHIZOPHRENICS WERE EXPRESSED IN AN EVEN MORE INCREASE IN THE AMOUNT OF LYSOSOMES, A DISTINCT SWELLING OF THE MITOCHONDRIA AND A DESTRUCTION OF THE CRISTS, IN AN EXPANSION OF THE ENDOPLASMATICAL NETWORK, A RAREFACTION OF THE NUCLEAR MATRIX AND A FRAGMENTATION OF THE GOLGI APPARATUS. IN SUCH CONDITIONS THERE WAS A SIGNIFICANT DECREASE IN THE AMPLITUDE OF THE ACTION POTENTIAL IN THE GANGLION. THE SERUM OF PART OF THE PATIENTS WITH NUCLEAR FORMS OF SCHIZOPHRENIA BROUGHT ON A DENSIFICATION OF THE NUCLEAR MATRIX AND NUCLEOLI, A FRAGMENTATION AND A NARROWING OF THE APERTURE OF CYSTERNIS IN THE ENDOPLASMATICAL NETWORK, A DENSIFICATION IN PART OF THE MITOCHONDRIA WITH A DESTRUCTION OF THE CRISTS AND A DECREASE IN THE AMOUNT OF ATTACHED RIBOSOMES. THE AMOUNT OF LYSOSOMES INCREASED SIGNIFICANTLY. THE NEGATIVE PHASE IN THE ACTION POTENTIAL IN THE GANGLION DECREASES SIGNIFICANTLY AND WAS NOT COMPLETELY RESTITUTED. THE SERUM OF THE OTHER PART OF PATIENTS OF THIS GROUP DID NOT INFLUENCE SIGNIFICANTLY THE ULTRASTRUCTURE ON THE ACTION POTENTIAL OF THE GANGLION.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--30OCT70
1 TITLE--AUTOMATIC WELDING OF TEE JOINTS BY A POWDER WIRE -U-
AUTHOR--(05)-DIKUN, V.N., CHERNOV, YU.A., PELEVICH, YU.P., DUBEN, L.V.,
SOLOVYOV, G.N.
COUNTRY OF INFO--USSR
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ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. TECHNOLOGY HAS BEEN DEVELOPED OF A SINGLE PASS AUTOMATIC WELDING OF TEE JOINTS USING A POWDER WIRE, IN WHICH JOINTS WITH A LEG UP TO 8 MM ARE WELDED IN A SINGLE PASS. WITH INCREASE OF THE LEG THE WELDING IS PERFORMED IN SEVERAL PASSES WITH SCRUBBING SLAG FROM JOINTS. THE WORKING CONDITIONS OF THE AUTOMATIC SINGLE PASS WELDING BY THE EPS-15,2 POWDER WIRE OF TEE JOINTS WERE DETERMINED.

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A MODEL FOR WATER METABOLISM IN THE ORGANISM		10 April 1978	
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The report studies the effect of salt and water loading and dehydration on an organism's water and electrolyte metabolism.			
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A MODEL FOR WATER METABOLISM IN THE ORGANS

(Article by R. Ye. Yasyenko and V. P. Solovov, Department of Water-Salt Physiology, Institute of Physiology, Acad. U. O. Borzomova, Academy of Sciences of the Ukrainian SSR, Kiev City, Fiziolicheskoy Zhurnal Akademiyi Nauk Ukrainy, Kiev, USSR, Vol. 29, No. 1, 1971, pp. 53-62)

The data accumulated in recent years by the collaboration of the Department of Water-Salt Physiology of the Institute of Physiology (Ukraine) and the Academy of Sciences of the Ukrainian SSR indicate that various specific factors (salt and water loading, dehydration) which affect the organism's water and electrolyte metabolism induce changes in the total body water content -- primarily as a result of changes in the volume of the intracellular compartment [2, 3] -- but also through changes in the volume of the circulating plasma [4]. The blood concentrations of albumin [5], glucose [6], potassium [7], and sodium [8], and affect the secretory rate of the digestive glands with a concomitant secretion of water and electrolytes [2, 4], and alter the water content in the lumen of the gastrointestinal tract [3], the rate of water absorption from the gut and, finally, the intensity of the renal diuretic function [2, 8]. A reciprocal type of relationship was found to prevail between indices of (fecal) water-salt, protein, and carbohydrate metabolism and the processes of water secretion in the secretions of the digestive glands into the gut lumen, and from the organism by the kidneys [5].

These considerations made possible a more detailed evaluation of water metabolism in the organism in terms of distinct interactions between the different aspects of this process which is responsible for maintaining a constant internal environment, and provided a basis for the formulation of a model of water metabolism in the organism. In the present case the volume of the extracellular compartment was the parameter of concern and which we had established to be relatively constant under extreme conditions (specifically, daily loading of an animal with a water volume equivalent to 5 to 10 percent of body weight for a period of 5 days).

Figure 1 presents a functional diagram of water metabolism in an organism which takes into consideration the relationship between the

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[I - USSR - C]

intracellular compartment (ICC) and the kidneys (K), the intracellular compartment (ICC), and the gut lumen (GL). The digestive glands (DG) are responsible for the last relationship.



Figure 1. Functional Diagram for Water Metabolism in an Organism (Abbreviations are explained in the body of the text)

The exchange of water between the internal environment of the organism and the GL primarily acts as a buffer which, along with the digestive ICC, prevents significant disturbances in water volume of the digestive environment. On the other hand, it is conceivable that the exchange of water between the internal environment and the GL regulates other indices of various organs and systems, such as the diuretic function of kidneys, which is the primary regulator of salt and water metabolism. It has been observed that the administration of water into the GL results in greater diuresis than in the case of water administered intravenously. This indicates the importance of the transfer of water from the blood to the GL by the DG in the maintenance of water-salt homeostasis in the organism and suggests the need for a detailed study of this process in connection with other processes of water-salt metabolism.

We had previously proposed certain principles for the formulation of models depicting water-salt metabolism in the organism, which specifically pertained to the process of water redistribution between specific compartments [1, 11, 12, 13]. These principles, used in conjunction with experimental data [2-10], would allow a mathematical description of water metabolism in the organism as depicted in the diagram in Figure 2.

The scheme provided for an integrator (I), an aperiodic link (AL), a delaying link (DL), function transformers (F), inverters (Inv), and a summing device. Variables and parameters are represented as follows: q_1 is the influx rate of exogenous water into the GL, q_2 is the rate of water absorption from the GL to blood, q_3 is the total current of water across the membrane separating the KIC and the

USSR

UDC 546.224

BELYAKOVA, L. D., KISELEV, A. V., MIKHAYLENKO, I. Ye., SOLOYAN, G. A., and SPITSYN, V. I., Academician

"Gas-Chromatographic Study of the Effect of Radioactive Radiation and Heat Treatment on the Adsorption Properties of Magnesium Sulfate"

Moscow, Doklady Akademii Nauk SSSR, Vol 197, No 1, March-April 1971, pp 88-90

Abstract: The procedure and results of a gas-chromatographic study of the effect of radioactivity and heat treatment on the adsorption properties of magnesium sulfate are presented. The initial magnesium sulfate samples contained about 1% water, and the variation of their adsorption properties with respect to n-hydrocarbons and benzene as a result of the removal of this water during calcination was studied. Curves are presented for the retained volumes of n-nonane and benzene as a function of the calcining time of $MgSO_4$ at 400° and 500°C and the ratios of the retained volumes of benzene measured at a column temperature of 245° to n-nonane (column temperature 200°) as a function of the calcining time of $MgSO_4$. It was found that radioactive samples of sulfates containing SO_4^{2-} ions with S^{35} exhibit appreciably stronger adsorption of hydrocarbons, the molecules of which belong to group B (containing high-bonds)

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USSR

BELYAKOVA, L. D., et al., Doklady Akademii Nauk SSSR, Vol 197, No 1, March-April 1971, pp 88-90

and to group A (containing only σ -bonds) by comparison with nonradioactive sulfates. Removal of water during calcining increases the adsorption of both groups of hydrocarbons. The specificity of molecular adsorption of aromatic hydrocarbons, which reaches a maximum after calcining at 400° for 5 hours, increases especially sharply.

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USSR

UDC 538.27

SOLOZHENKIN, P. M., ZEMLYANSKIY, N. I., CHERVIN, I. I., and MEL'NIK, Ya. I.,
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"Nuclear Magnetic Resonance Spectra of Dithiophosphorus Acids"

Dushanbe, Doklady Akademii Nauk Tadzhikskoy SSR, Vol 14, No 6, 1971, pp 38-42

Abstract: To study the spin-spin coupling of phosphorus with hydrogen, dithiophosphates and dithiophosphinates were investigated with nuclear magnetic resonance (NMR) spectroscopy. High resolution NMR spectra were recorded for potassium dithiophosphates with acetylene and alkyl groups on the Varian HA-100 spectrometer, at a working frequency of 100 MHz. The NMR spectrum of potassium O-O-dipropargyldithiophosphate consists of a triplet of the CH_3 group due to spin-spin interaction of this proton with the methylene group, and two doublets of the CH_2 group. The doublets of the CH_2 group are associated by interaction of protons with the phosphorus nucleus via oxygen. In dimethylmonothiophosphate, the CH_3 group, under the influence of the P^{31} atom, is split into the doublet $J_{\text{CH}_3-\text{P}^{31}} = 12 \text{ Hz}$. The NMR spectrum of potassium O-O-dicrotyldithiophosphate consists of the CH_3 doublet, the multiplet of the $\text{CH}=\text{CH}$, and the doublet CH_2O , whose

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SOLOZHENKIN, P. M., et al., Doklady Akademii Nauk Tadzhikskoy SSR, Vol 14, No 6, 1971, pp 38-42

components do not have a completely resolved fine structure due to the small constant of spin-spin interaction between protons $J_{CH_2-CH} = 2\text{Hz}$. Similarly, the NMR spectra of the following compounds were recorded and analyzed: potassium O-O-di(beta-methyl)-allyldithiophosphate, potassium O-O-diethyl-dithiophosphate, and sodium mono- and dithiophosphinates. Based on the foregoing data, it can be concluded that in dithiophosphinates the spin-spin coupling J_{HP} is extended even to protons separated from phosphorus by several bonds; this long-range spin-spin coupling is not observed in dithiophosphates.

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USSR

UDC 538.113 + 541.49 + 661.719.1 + 546

SOLOZHENKIN, P. M., KOPITSYA, N. I., and GRISHINA, O. N., Institute of Chemistry, Academy of Sciences TadzhSSR

"EPR of the Divalent Copper O-Alkyl Alkyldithiophosphonate Solutions"

Moscow, Zhurnal Strukturnoy Khimii, Vol 12, No 1, Jan-Feb 71, pp 167-170

Abstract: Complexes between divalent copper and O-alkyl alkyldithiophosphonates (I) were obtained by treating copper sulfate in aqueous solution with the appropriate phosphonic acid in organic solvents. When the complexes were studied in different solvents at room temperature, no effect was noted on the EPR spectra. The superfine structure and complementary superfine structure from the interaction of copper and phosphorus atoms was analyzed and contrasted with the structures of dithiophosphates and dithiophosphinates. Considerable dislocation of the unpaired electron is observed in (I) which results in the interaction with P^{31} . The bonding to copper is of a covalent character.

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USSR

UDC 538.113

LARIN, G. M., SOLOZHENKIN, P. M., DYATKINA, M. Ye., and KOPITSYA, N. I.,
Institute of General and Inorganic Chemistry imeni N. S. Kurnakov, Academy of
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"Study of the Superfine Structure of Ligands of Complexes in EPR Spectra.
Communication V. Investigation of Divalent Copper Dithiophosphinates and
Dithiophosphates"

Moscow, Zhurnal Strukturnoy Khimii, Vol 12, No 1, Jan-Feb 71, pp 26-33

Abstract: EPR spectra were taken of copper (II) diethyldithiophosphinate (I),
diethyl dithiophosphate (II), and dixylyl dithiophosphate (III). It has been
shown that the radical bound to the phosphorus atom has a characteristic
effect on EPR spectra. The spinhamiltonian parameters of (I) differed from
those of (II) and (III) [they were identical for (II) and (III)], leading to
the conclusion that this difference was due to the change in the immediate
area surrounding the phosphorus atom. On the basis of experimentally deter-
mined values for g-factors, SFS constants, and ΔE , the MO coefficients were
calculated and reported. The mechanism of the effect of the radical on the
axial-symmetric spin-hamiltonian is discussed.

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1/2 009 UNCLASSIFIED
TITLE--FLOTATION PROPERTIES OF PHOSPHORUS COMPOUNDS CONTAINING SULFUR -U-
AUTHOR--(04)--SOLOZHENKIN, P.M., MASTRYUKOVA, T.A., LOSEVA, N.P.,
TREGUBENKO, N.I.
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